

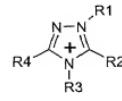
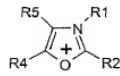
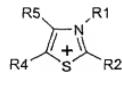
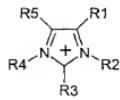
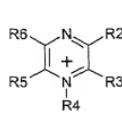
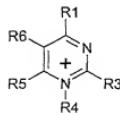
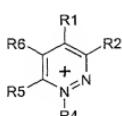
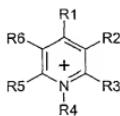
## Patent claims

### 1. An ionic liquid of the formula



wherein:

$K^+$  is a cation selected from



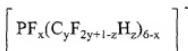
wherein

$R^1$  to  $R^6$  are identical or different and are each individually

- H,
- halogen,
- an alkyl radical ( $C_1$  to  $C_8$ ), which is unsubstituted or partially or fully substituted by F, Cl, N( $C_nF_{(2n+1-x)}H_x$ )<sub>2</sub>, O( $C_nF_{(2n+1-x)}H_x$ ), or ( $C_nF_{(2n+1-x)}H_x$ ), where  $1 < n < 6$  and  $0 < x \leq 13$ ,

- a phenyl radical which is unsubstituted or partially or fully substituted by F, Cl, N(C<sub>n</sub>F<sub>(2n+1+x)</sub>H<sub>x</sub>)<sub>2</sub>, O(C<sub>n</sub>F<sub>(2n+1-1)</sub>H<sub>x</sub>), SO<sub>2</sub>(C<sub>n</sub>F<sub>(2n+1-x)</sub>H<sub>x</sub>) or C<sub>n</sub>F<sub>(2n+1-x)</sub>H<sub>x</sub> where 1<n<6 and 0<x≤13, or one or more pairs of adjacent R<sup>1</sup> to R<sup>6</sup> can also be an alkylene or alkenylene radical having up to 8 C atoms and which is unsubstituted or partially or fully unsubstituted by halogen, N(C<sub>n</sub>F<sub>(2n+1+x)</sub>H<sub>x</sub>)<sub>2</sub>, O(C<sub>n</sub>F<sub>(2n+1-x)</sub>H<sub>x</sub>), SO<sub>2</sub>(C<sub>n</sub>F<sub>(2n+1-x)</sub>H<sub>x</sub>) or C<sub>n</sub>F<sub>(2n+1-x)</sub>H<sub>x</sub> where 1<n<6 and 0≤x≤13; and

A<sup>-</sup> is an anion of the following formula



where 1≤x<6

1≤y≤8 and

0≤z≤2y+1.

2. A compound according to claim 1, wherein at least one R<sup>1</sup> to R<sup>6</sup> group is a halogen.

3. A compound according to claim 1, wherein at least one R<sup>1</sup> to R<sup>6</sup> group is an alkyl radical (C<sub>1</sub> to C<sub>6</sub>), which is unsubstituted or partially or fully substituted by F, Cl, N(C<sub>n</sub>F<sub>(2n+1-x)</sub>H<sub>x</sub>)<sub>2</sub>, O(C<sub>n</sub>F<sub>(2n+1-x)</sub>H<sub>x</sub>), or (C<sub>n</sub>F<sub>(2n+1-x)</sub>H<sub>x</sub>), where 1<n<6 and 0<x≤13.

4. A compound according to claim 1, wherein at least one R<sup>1</sup> to R<sup>6</sup> group is a phenyl radical which is unsubstituted or partially or fully substituted by F, Cl, N(C<sub>n</sub>F<sub>(2n+1+x)</sub>H<sub>x</sub>)<sub>2</sub>, O(C<sub>n</sub>F<sub>(2n+1-1)</sub>H<sub>x</sub>), SO<sub>2</sub>(C<sub>n</sub>F<sub>(2n+1-x)</sub>H<sub>x</sub>) or C<sub>n</sub>F<sub>(2n+1-x)</sub>H<sub>x</sub> where 1<n<6 and 0<x≤13.

5. A compound according to claim 1, wherein at least one adjacent pair of R<sup>1</sup> to R<sup>6</sup> is an alkylene or alkenylene radical having up to 8 C atoms and which is unsubstituted or partially or fully unsubstituted by halogen, N(C<sub>n</sub>F<sub>(2n+1-x)</sub>H<sub>x</sub>)<sub>2</sub>, O(C<sub>n</sub>F<sub>(2n+1-x)</sub>H<sub>x</sub>), SO<sub>2</sub>(C<sub>n</sub>F<sub>(2n+1-x)</sub>H<sub>x</sub>) or C<sub>n</sub>F<sub>(2n+1-x)</sub>H<sub>x</sub> where 1<n<6 and 0≤x≤13.

6. A compound according to claim 1, wherein said compound has at least one perfluorinated alkyl group.

7. A compound according to claim 1, wherein said compound contains at least one  $C_yF_{2y+1-z}H_z$  group selected from  $C_2F_5$  and  $C_4F_9$ .
8. An electrochemical cell comprising a cathode, an anode, a separator, and an ionic liquid of claim 1.
9. A capacitor comprising of at least a pair of electrodes, a separator, and an ionic liquid of claim 1.
10. An electrolyte composition comprising an ionic liquid of claim 1 and an aprotic solvent.
11. An electrolyte composition comprising an ionic liquid of claim 1 and a conductive salt.